

REMARKS

Claims 1-26 were pending. Claims 1-26 were rejected. By the above amendments, the applicants have amended claims 1, 6, 13 and 14. The applicants request further consideration and re-examination in view of the amendments above and remarks set forth below.

Claim 6 is amended to correct an obvious informality. Other claim amendments are discussed below.

The applicants have amended the specification at page 3, lines 13-19, to make obvious grammatical corrections. The applicant has also amended the specification at pages 17 and 18 to provide serial numbers for the identified applications.

Claim Objections:

Claim 13 was objected to on the grounds that the term “the secondary path” lacked antecedent basis. By the above amendments, the applicants have amended claim 13 to replace “the secondary path” with “the backup path,” which has antecedent basis in claim 13.

Rejections under 35 U.S.C. § 102:

Claims 1-2, 7-11, 14-15 and 20-24 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2002/0122421 by Ambiehl et al. (hereinafter, “Ambiehl”).

By the above amendments, the applicants have amended claim 1 so that claim 1 recites as follows:

1. (currently amended) A computer implemented method for verifying a design for an interconnect fabric, the design including an arrangement of interconnect elements for interconnecting a plurality of network nodes and the design having requirements for a plurality of flows among the network nodes, and the method comprising:

selecting a flow from the plurality of flows;

performing a sequence of steps for the selected flow, the sequence comprising associating the selected flow with a path for the selected flow through the interconnect fabric and for each interconnect element in the path, aggregating requirements associated with the selected flow with requirements for each flow selected previously and determining whether the aggregated requirements exceeds a capacity of the interconnect element; and

repeatedly selecting a flow that has not yet been selected from the plurality of flows and performing the sequence of steps until each of the flows of the plurality has been selected or a negative determination is reached.

The amendments to claim 1 are supported by the applicants' specification at least at page 8, line 5, to page 11, line 2. Particularly, flows are associated with paths through the interconnect fabric. Applicants' specification at page 7, line 24 to page 8, line 1. The path for a flow is selected for evaluation. Applicants' specification explains at page 8, lines 30-31 and page 9, line 20. For each element along the path, the requirements for the flow that corresponds to the path through that element are aggregated with the requirements of other flows that were evaluated prior to the path currently being evaluated. Applicants' specification at page 9, lines 2-7. Then, a determination is made as to whether the capacity of each element is exceeded by the aggregated requirements. Applicants' specification at page 9, lines 7-9. This process is repeated for each flow and for each element of each flow. Applicants' specification at page 9, lines 9-10.

In this manner, each flow is considered, in turn, by aggregating the requirements of the flow currently being considered with those of other flows previously considered. Applicants' specification at page 10, lines 28-30. Because the method is systematic, the method can be implemented by a computer. Accordingly, claim 1 recites that the method is computer implemented. In addition, because the flows are evaluated incrementally, a negative determination for a design may be reached before all the flows are exhaustively evaluated. A negative determination indicates the need for modification to the design or relaxation of the flow requirements. Applicants' specification at page 11, lines 13-22.

Ambiehl discloses a method for the sizing of a deterministic type packet-switching network based on determining delay (referred to as "jitter") components

contributed by different interconnection nodes of the network, at their different output ports. Abstract of Ambiehl. Ambiehl explains that a packet that crosses an interconnect device may experience jitter due to contention for the same output port of the device by other packets whose paths cross the interconnect device. Ambiehl at para. [0062]. The total jitter that a packet experiences is equal to the sum of the jitter components contributed by all of the interconnect devices crossed by the packet. Ambiehl at para. [0063]. Therefore, to verify that the network topology matches constraints, Ambiehl determines the jitter components contributed by the interconnection nodes at their different output ports and, from this, deduces the jitter affecting different proposed virtual paths. Ambiehl at para. [0097]. Minimum time intervals between packets or aggregates of packets are also verified to be sufficient that the jitter determinations are not questionable. Ambiehl at para. [0097].

Ambiehl does not suggest or disclose all of the elements of amended claim 1. For example, Ambiehl does not suggest or disclose considering each flow, in turn, by repeatedly selecting a flow that has not yet been selected from a plurality of flows, aggregating requirements associated with the selected flow with requirements for each flow selected previously and determining whether the aggregated requirements exceeds a capacity of the interconnect element. Ambiehl also does not suggest or disclose repeating these steps until each of the flows of the plurality has been selected or a negative determination is reached. For at least these reasons, amended claim 1 is allowable over Ambiehl. Claims 2 and 7-11 are allowable at least because they depend from an allowable base claim 1.

Moreover, because applicants' method is systematic, the method can be implemented by a computer. Accordingly, as mentioned above, applicants' claim 1 recites that the method is computer implemented. Ambiehl does not suggest or disclose such a feature either. Rather, nowhere does Ambiehl suggest that a computer could perform the method disclosed by Ambiehl. This is another reason why claim 1 is allowable over Ambiehl and is also another reason why claims 2 and 7-11 are allowable being dependent from an allowable base claim 1.

By the above amendments, the applicants have amended claim 14 such that claim 14 recites as follows:

14. (currently amended) A system for verifying a design for an interconnect fabric comprising:

a set of design information including requirements for a plurality of flows and a design specification wherein each of the plurality of flows is associated with a path for the flow through the interconnect fabric; and

a fabric design verification tool that selects a flow from the plurality of flows, performs a sequence of steps for the selected flow, the sequence comprising aggregating requirements associated with the selected flow with requirements for each of the flows selected previously and determining whether the aggregated requirements exceeds a capacity of the interconnect element and wherein the fabric design verification tool repeatedly selects a flow that has not yet been selected from the plurality of flows and performs the sequence of steps until each of the flows of the plurality has been selected or a negative determination is reached.

Therefore, similarly to claim 1, claim 14 is amended to require that each flow is considered, in turn, by repeatedly selecting a flow that has not yet been selected from a plurality of flows, aggregating requirements associated with the selected flow with requirements for each flow selected previously and determining whether the aggregated requirements exceeds a capacity of the interconnect element. Claim 14 also requires that these steps are repeated until each of the flows has been selected or a negative determination is reached. As explained above, Ambiehl does not suggest or disclose all of these features. For at least this reason, amended claim 14 is allowable over Ambiehl. Claims 15 and 20-24 are allowable at least because they depend from an allowable base claim 14.

Moreover, because applicants' method is systematic, the method can be implemented by a fabric design verification tool. Accordingly, applicants' claim 14 recites that the verification is performed by a fabric design verification tool. Ambiehl does not suggest or disclose such a feature either. Rather, nowhere does Ambiehl suggest that a computer or other tool could perform the method disclosed by Ambiehl. This is

another reason why claim 14 is allowable over Ambiehl and is also another reason why claims 15 and 20-24 are allowable, being dependent from an allowable base claim 14.

Rejections under 35 U.S.C. § 103:

Claims 3-6 and 16-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ambiehl, as applied to claims 1-2, 7-11, 14-15 and 20-24 above, in view of U.S. Patent No. 5,802,286 to Dere, et al. (hereinafter, "Dere"). Particularly, the office action states that Ambiehl does not teach that the interconnect devices include hubs. However, the office action states the Dere discloses hubs in Figure 2 and further states that it would have been obvious to include hubs as network devices in Ambiehl's method.

The applicants respectfully traverse the rejection. Because claims 3-6 and 16-19 are dependent from claims 1 and 14, the rejection of claims 3-6 and 16-19 depends on the rejection of claims 1 and 14 in view of Ambiehl. However, as explained above, claims 1 and 14 are allowable over Ambiehl. For at least this reason, claims 3-6 and 16-19 are allowable over Ambiehl and Dere.

Moreover, the applicants submit that the mere disclosure of hubs in a network, as in Dere, is not sufficient to make the use of hubs in the method of Ambiehl obvious. This is at least because hubs are special case of network devices since packets received at any of the input ports are repeated at all of the output ports. However, neither Ambiehl nor Dere provides a sufficient teaching that would indicate how the method of Ambiehl could be extended to hubs or even that it would be possible to extend the method of Ambiehl to hubs. This is another reason why claims 3-6 and 16-19 are allowable over Ambiehl.

Claims 12-13 and 25-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ambiehl, as applied to claims 1-11 and 14-24 above, in view of U.S. Patent Publication No. 2001/0039574 to Cowan et al. (hereinafter, "Cowan"). Particularly, the office action states that Ambiehl does not teach providing a backup path for a primary path and associating both paths with the same flow so that the backup path may take the place of the primary path if the primary path fails. However, the office action states the Cowan discloses providing redundant paths in consideration of fault-

tolerance and further states that it would have been obvious to include provide backup paths in Ambiehl's method.

The applicants respectfully traverse the rejection. Because claims 12-13 and 25-26 are dependent from claims 1 and 14, the rejection of claims 12-13 and 25-26 depends on the rejection of claims 1 and 14 in view of Ambiehl. However, as explained above, claims 1 and 14 are allowable over Ambiehl. For at least this reason, claims 12-13 and 25-26 are allowable over Ambiehl and Cowan.

Moreover, the applicants submit that the mere disclosure of providing redundant paths in consideration of fault-tolerance, as in Cowan, is not sufficient to make the use of redundant paths in the method of Ambiehl obvious. This is at least because neither Ambiehl nor Cowan provides a sufficient teaching that would indicate how the method of Ambiehl could be extended to redundant paths or even that it would be possible to extend the method of Ambiehl to redundant paths. This is another reason why claims 12-13 and 25-26 are allowable over Ambiehl.

Further, claims 12 and 25 require that a flow is assigned to a primary path in the design and to a backup path in the design to determine whether the design has capacity for the flow in the primary path and the backup path simultaneously. Taken singly or in combination, Ambiehl and Cowan, do not disclose all of these limitations. This is another reason why claims 12 and 25 are allowable.

Claims 13 and 26 require that a flow is assigned to a backup path for the flow in the design to determine whether the design has capacity for the flow in the backup path in event of a failure in a primary path for the flow. Taken singly or in combination, Ambiehl and Cowan, do not disclose all of these limitations. This is another reason why claims 13 and 26 are allowable.

Conclusion:

In view of the above, the applicants submit that all of the pending claims are now allowable. Allowance at an early date would be greatly appreciated. Should any outstanding issues remain, the examiner is encouraged to contact the undersigned at (408) 293-9000 so that any such issues can be expeditiously resolved.

Respectfully Submitted,

Dated: July 20, 2006

A handwritten signature in black ink, appearing to read 'Derek J. Westberg', is written over a horizontal line.

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